Microsemi Miniaturizes PA for WLAN

Microsemi Corporation's newest 2.4 GHz wireless LAN power amplifier comes in the smallest package available for 802.11b/g/n WiFi client and access point applications, it claims. This should impress designers hoping to save on circuit board area without compromising on performance or manufacturability especially for WiFi front-end modules and VoIP handheld applications.

It has been some time since Microsemi launched new InGaP MMIC products. A few months ago at IEEE MTT-S International Symposium it showcased some new chips as part of its expanding RF power products line. It made a key strategic acquisition early in the year by adding Advanced Power Technology which gave it SiC technology. However, this will likely better suit higher power applications (as well as defence/aerospace end-user markets, etc.) while it is aiming its HBT InGaP power amplifiers into the volume markets of IEEE 802.11a/b/g WLAN applications such as handset VOIP.

Until the latest announcement, Microsemi's newest InGaP HBT power amplifiers included the LX5506M and LX5530 which are for broadband, high-gain power amplification in 802.11a applications and the LX5511 and LX5513 for high gain 802.11b/g applications.

Dual-mode handsets are made by Motorola, Cisco, Samsung, LG and others. The first VoIP handsets were all USB-based, but now it is all about cordless, Bluetooth and WiFi. Handset OEMs world over are buying into the potentially huge market for so-called 'fixed-mobile convergence' (FMC) technology.

ABI Research predicts worldwide shipments of dual-mode, *i.e.* cellular, and VoIP-over-WiFi handsets will exceed 300m during 2011. The future is by no means assured – ABI warns that the arrival of so-called 'femtocell access points', *i.e.* small cellular base-stations for use in residential or corporate environments, may act so as to disrupt the market later on. Using femtocell access points you will be able to wirelessly utilize home broadband connection for voice. Good news for Microsemi *et al.*, ABI says most of the 300 million dual-mode handsets it predicts are coming along will be based on 802.11n.

Designated the LX5514, the new miniature amplifier's 2×2 mm footprint allows a 55% reduction in board space over first generation 3×3 mm devices and provides performance equal to Microsemi's best-in-class, LX5511 power amplifier. The LX5514 is a two-stage MMIC device manufactured in an advanced InGaP HBT process. With active bias and output pre-matching it achieves a power gain of 28 dB with a low quiescent current of 80 mA. The LX5514 also provides a low EVM of 3% at 20 dBm OFDM output power while consuming only 150 mA of total DC current.

The LX5514 is Microsemi's latest 2.4 GHz power amplifier solution into the fast growing 802.11b/g/n WiFi marketplace. In addition to its space-saving footprint, the LX5514's design includes an integrated power detect function that not only saves board space but also reduces total BOM cost. At an ultra thin 0.46 mm height, the LX5514 is ideally suited for WiFi front-end modules and VoIP handheld applications.

Web: www.microsemi.com

BAE Systems Blends CMOS, Opto

BAE Systems has been awarded $6m under Phase II of the Defense Advanced Research Projects Agency's (DARPA) Electronic and Photonic Integrated Circuits (EPIC) program to further develop the technology.

"Based on our current advances, I foresee a viable mixed-signal electronic/photonic application in less than five years," said Dr. Mike Grove, BAE Systems' EPIC program manager in Washington, DC. "By incorporating selected photonic components into the CMOS process, we are achieving chip performance levels researchers have sought for years."

The company is taking a mature electronics process in CMOS and adapting it to add complex photonics functions – ranging from the photonic processing of massive amounts of RF bandwidth to extremely high-speed digital interconnects. CMOS-compatible devices the team developed during EPIC's Phase I include monolithic integration of ultra-low-power-consumption silicon ring optical modulators, fourth-order narrowband optical filters with tuneable passbands and centre wavelengths, and SiGe waveguide photodetectors.

The Phase II award brings the total EPIC contract value to nearly $14m. DARPA's Microsystems Technology Office manages the EPIC program. BAE Systems' EPIC team includes subcontractors Bell Laboratories, the Massachusetts Institute of Technology, Cornell University, and Applied Wave Research.

Web: www.baesystems.com

Microsemi Gets Contract to Develop SiC RF Avionics

Microsemi has announced that US Congress has appropriated $1.8m to allow Microsemi's Power Products Group (formerly Bend, Oregon-based Advanced Power Technology) to develop technology for avionics. It will be administered by the US Air Force Research Laboratory to support future designs of lighter and more efficient jet fighter communications systems. Plus it will enable substantial growth of Microsemi's operations in Bend.

This follows a contract with Northrop Grumman earlier in the year where Microsemi should provide leading edge SiC products to this leading defense contractor.

In September, Microsemi introduced the industry's highest power UHF transistor for weather and over-the-horizon radar applications, doubling the power of prior solutions. The 0405-1000M provides no less than a kilowatt of power thus replacing two 500 W devices that previously were the highest available for these mission-critical UHF applications operating at 400-450 MHz, with no compromise in RF performance.

"We are very excited to be the first in the industry with a one kilowatt broadband transistor for this significant market," said Jerry Chang, Director of Microsemi's Radar and RF Module Business in Santa Clara, California. "Now our customers can use this one transistor instead of two less powerful devices to gain substantial reductions in size, complexity and the cost of their amplifier boards," he said.

Web: www.microsemi.com